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Table of Contents

Page

TABLE OF AUTHORITIES ii

STATEMENT OF INTEREST 1

INTRODUCTION AND SUMMARY OF ARGUMENT 2

ARGUMENT 5

I *TDR Programs Are a Valuable Tool for Making Land Use Regulation Fairer and More Effective.* 5

A. The Promise of TDR Programs 5

B. TDR Programs Are Effective in Practice 8

II. *Petitioner's Proposed Constitutional Rule Would Favor Traditional Low Density Zoning, Encourage Sprawl and Perpetuate Inequity* 12

III. *Unequal Impacts on Different Landowners Are an Inevitable Consequence of Reasonable and Necessary Land Use Regulations Which TDR Programs Can Help Mitigate* 15

IV *Urban Sprawl Imposes Substantial Economic and Social Costs on the Public as Well as Private Citizens and Firms* 22

CONCLUSION 28

Table of Authorities

Page

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In The

Supreme Court of the United States

October Term, 1996

No. 96-243

BERNADINE SUITUM,
Petitioner,

v.

TAHOE REGIONAL PLANNING AGENCY,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Ninth Circuit

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BRIEF OF DR. STEVEN BERRY, DR. ROBERT BURCHELL, DR. ROBERT CERVERO, DR. ROBERT CONSTANZA, DR. BENJAMIN CHINITZ, DR. ROBERT HEALY, DR. JOHN KEENE, DR. DAVID LISTOKIN, DR. JAMES NICHOLAS, DR. C. FORD RUNGE AND MR. RICHARD TUSTIAN AS *AMICI CURIAE* IN SUPPORT OF RESPONDENT

STATEMENT OF INTEREST

Pursuant to Supreme Court Rule 37, we file this brief with the consent of the parties as *amici curiae* in support of respondent Lake Tahoe Regional Planning Agency.[1]

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[1] Letters from the parties consenting to the filing of this brief have been filed with the Clerk of Court.

Amici are economists with expertise in land use and regulated markets. They have an interest in helping this Court to understand the economic results of existing and proposed takings rules. Many amici have "in the trenches" experience in the effort to make land use regulations both more efficient and more equitable.

INTRODUCTION AND SUMMARY OF ARGUMENT

This brief is submitted by economists with expertise in land use and regulated markets[2] to provide economic data and analysis which may be of assistance to the Court in resolving this case. A fundamental issue in this case is whether the value of a Transferable Development Right ("TDR") should "count" in deciding the threshold question of whether a land use regulation does not effect a taking requiring the payment of just compensation under the Fifth Amendment. Amici believe that, from the standpoint of sound economic policy, the answer should be "yes."

TDR programs provide a valuable market mechanism for improving upon both the effectiveness and equity of traditional land use regulations. Traditional land use regulations reflect a serious conflict between the legitimate need of State and local governments to regulate land uses to

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address important public concerns and the legitimate interests of individual landowners in reaping the financial rewards of land ownership. To balance these interests, traditional land use programs often severely limit development in certain parts of the community or on certain types of land, while at the same time attempting to accommodate at least some development on each parcel to avoid potential takings liability. The result is a land use regulatory system which has failed to adequately control the location of development, producing economically inefficient "sprawl" development patterns, serious public safety problems such as excessive flooding, and losses of valuable environmental resources. At the same time, the current system has sometimes produced significantly unequal and severe effects on different landowners.

Transfer of Development Rights programs offer a market-based tool for mitigating this conflict. By severing the issue of the appropriateness of restrictions on land use to achieve important public purposes from the issue of the owner's entitlement to an equitable share of the community's total development potential, TDR programs provide the opportunity to both accomplish the goals of effective regulation and achieve greater equity. Unequal economic impact is a necessary and unavoidable consequence of appropriate land use regulation because it would not be socially beneficial to allow all lands to be developed to the same degree. Even the same rule affects different properties differently because of their different physical characteristics, proximity to infrastructure and market conditions. TDR programs provide a mechanism for *improving* upon the fairness of the current land use system through more similar treatment of landowners while allowing for necessary differences in the regulation of different lands. As discussed below, the promise of TDR programs is confirmed by extensive experience around the country with functioning

TDR markets that yield substantial economic benefits to landowners.

Petitioner proposes that the takings clause be read to require sharply different treatment of TDR programs which achieve the same or greater equity as traditional zoning density controls. Under this view, traditional density controls on land use would continue to be constitutional, despite the fact such controls frequently have widely unequal impact on different landowners, but TDR programs would be of no value to State and local officials in avoiding constitutional takings judgments. As a result, they would have a strong incentive to continue to rely on traditional density controls and perpetuate the conflict of interests described above.

The continued reliance on density controls to address land use concerns, which do not reduce the magnitude of development but simply spread it out, would exacerbate the dispersal of development or "urban sprawl." Recent economic studies and reports document the high public and private financial costs of sprawl Providing public services to dispersed communities is significantly more costly than providing those services to concentrated communities. Other recent studies have attributed to this land use pattern part of the responsibility for the increasing costs of congested transit systems, air and water pollution, and loss of prime farmland and natural resources.

ARGUMENT

I. TDR Programs Are a Valuable Tool for Making Land Use Regulation Fairer and More Effective.

A. The Promise of TDR Programs.

Our nation's current land use practices and policies often reflect a collision between competing values. On the one hand, to address the financial, social, and environmental costs of some land development, state and local governments have imposed land use regulations that, like many other government actions, can have highly differential economic impacts. On the other hand, our social values -- and the language of the Bill of Rights -- require careful consideration of the property interests of those individuals or firms who may be disproportionately affected by land use regulation.

These competing forces have created a situation which can be less than optimal from both social and individual standpoints. Faced with the desire to limit demand for new government services, and limit the impact of development on existing communities, while assuring some economic use for each landowner, land use regulations have relied heavily on density controls.[3] These controls limit the permitted amount of development on a per acre basis. As discussed in more depth below, see Section IV, the effect of density restrictions has been to spread out development in a manner that has been recognized to have high economic and social costs. At the same time, these regulatory systems have left little or no

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3 "Euclidian zoning" named after the form of zoning approved in *Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926), is the dominant land use regulatory approach across the country. *See* Platt, R.H., *Land Use and Society: Geography, Law & Public Policy* 215-48 (1996). Zoning regulates the density of development, the dimensions or bulk of buildings with minimum lot sizes. *Id.* at 235.

role for markets to encourage development in those locations where development is most valuable.

Land use regulations have also recognized the different physical attributes of land and the economic, health and environmental costs involved in the development of such areas as floodplains and coastal erosion zones, fire hazard zones, and areas where development can disproportionately contribute to water pollution, such as wetlands and riparian zones. But lacking alternative tools to create equity, officials often permit some limited development in sensitive areas such as flood hazard zones that undermine the goals of the regulation. (For example, flood damages have risen steadily, even on a per capita basis adjusted for inflation, over the last fifty years despite some restrictions on new development in flood areas. *See* The Federal Interagency Floodplain Management Task Force, *Floodplain Management in the United States*, Vol. 1, Summary at 17 (1992).

On the other hand, the current land use regulatory system often has uneven impacts on different landowners, and has probably helped spawn increasing litigation over the "takings" question. Some development for all does not mean equal economic impacts. Moreover, the inherent limitations of density controls as a tool for addressing development costs tend to lead local officials in the direction of applying this tool more and more aggressively in an effort to make it work -- to attempt to reduce new development to the minimum, instead of to attempt to channel that development into places where it can be more easily serviced.

Traditional land use tools that spread development may be less productive of aggregate property values than alternative regulatory mechanisms such as TDR's that concentrate development or restrict it in sensitive areas while encouraging it in others. A number of studies have revealed

that environmental amenities, such as water and air quality -- whose protection has motivated land use restrictions -- can indeed enhance the private property values of residential communities.[4] Studies have also shown that development restrictions tend to trigger increases in property value of developable properties, and local officials could reasonably conclude that growth restrictions are a sound strategy for increasing local property values as a whole.[5] The equity problem arises, of course, because the restricted property owner may not share in this increase.

Transferable Development Rights provide a quasi-market solution to this paradox that has the potential to accomplish more effectively the goals of land use regulations while also increasing their fairness. By allowing a parcel's development potential to be severed and sold separately from the land itself, TDR programs offer officials an escape from the problem that limiting development on some land now also means limiting the development rights of the landowner. Instead, TDR programs can pursue development restrictions where they make sense and offer landowners a fair share of community development rights on condition that some or all of those rights be exercised off-site.

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4 For a recent example of studies showing how improved water quality increases the value of lakefront property, *see* H.J. Michael, *et al*, *Water Quality Affects Property Prices: A Case Study of Selected Maine Lakes* (1996) (demonstrating association between lake water quality and lake front property). Studies showing strong relationships between property valuess and air pollution include R.G. Ridker & J.A. Henning, "Determinants of Residential Property Values with Special Reference to Air Pollution," *Rev. Econ. Stat.* 246-259 (1967); John Nelson, "Residential Choice, Hedonic Prices and the Demand for Urban Air Quality," 5 *J. Urb. Econ.* 357-69 (1978).

5 *See, e.g.*, Katz, Lawrence & Kenneth Rosen, "The Interjurisdictional Effects of Growth Controls on House Prices," 30 *Journal of Law and Economics* 149-60 (1987); David Segal & Philip Srinivasan, "Impact of Suburban Growth Restrictions on Urban Housing Price Inflation 1975-1978," 6 *Urban Geography* 14-26 (1985).

In most TDR programs, landowners retain all the rights of landownership, including the right to exclude others, except that they must exercise some or all of their development rights elsewhere in the community. They have a market for TDR's because developers in growth zones -- instead simply of receiving a windfall from the restrictions on others -- must purchase development rights from landowners in restricted zones to avail themselves of the opportunity for greater development. In this way, the property-enhancing value of restrictions is shared among restricted and unrestricted landowners because the value of TDR's will increase as the value of development increases in the community as a whole.

TDR programs also create an opportunity to exploit the efficiencies inherent in marketplace transactions among private parties. By designating growth zones where different parcels can freely compete in the market for development rights, they create areas where market forces, and not regulatory restrictions, will determine the precise locations where development rights are exercised.

B. TDR Programs Are Effective in Practice.

Across the country, there are numerous examples of substantial Transferable Development Rights programs which are actually operating and providing substantial returns to owners of restricted lands. Contrary to the contention of the petitioner in this case that TDR programs represent a "sham," actual experience demonstrates that these programs have succeeded in improving both the effectiveness and fairness of State and local regulatory programs.

THE NEW JERSEY PINELANDS. The New Jersey Pinelands is a 1.1 million region of southern New Jersey.

The United States Congress and the New Jersey Legislature passed legislation calling for the protection, preservation and enhancement of the unique ecological, cultural, educational, agricultural, scenic, recreational and public health values of the Pinelands. *See* N.J. Parks and Recreation Act of 1978, §502(a)(c), 16 U.S.C. §471I; State Pinelands Protection Act, N.J. Stat.Ann.Sec. 13:18A-2. The goal of the resulting Comprehensive Management Plan was to manage these important resources, with a minimal roll for public acquisition.[6] The Pinelands was not simply an environmental preserve. The 1980 population within the area of the Pinelands amounted to 559,454.[7] By 1990 this population had grown to 699,778,[8] and increase of 25%. The region produces approximately 24% of New Jersey's total agricultural income,[9] with cranberries and blueberries being particularly significant.

The Pinelands management plan divided the total region into five districts: the Preservation Area, the Forest Area, the Agricultural Production Districts, the Rural Development Districts, and the Regional Growth Districts. One of the components of the plan was restricting development of much of the ecologically sensitive property within the Preservation, Forest and Agricultural Production districts. At the same time, the Plan announced a Transferable Development Rights program to reduce the impacts of the plan on

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6 The total amount designated for acquisition is $26 million from the federal government with a 25% state match. The total would be $32.5 million for land acquisition. *See* U.S. Dept. of the Interior, *Draft Environmental Impact Statement, Proposed Comprehensive Management Plan for the Pinelands National Preserve* 3.4 (Undated)

7. New Jersey Pinelands Commission, *Pinelands Development Credits, Survey Report Through December 31, 1995* (1996).

8. *Ibid.*

9. *Ibid.*, p. 5.22.

property values, especially within the Preservation and Forest Areas.

The "Pinelands Development Credits" program has now been in place for 14 years, and data on the program's implementation demonstrate the program's success in ensuring a reasonable return to landowners in the restricted areas. *See* New Jersey Pinelands Commission, *Pinelands Development Credits, Summary Report, Through December 31, 1995* (1996). Since inception, 4,232 development rights have been "severed" under the PDC program, resulting in the protection of 12,969 acres of land within the district. The owners of these "protected" areas retained, in addition to the opportunity to sell development rights, the right to engage in certain land uses, such as agricultural activities. Table 1 and 2 in the Appendix summarize activity to date under the PDC program.

The average price paid for a development right was $3239, with a maximum of $5650 and a minimum of $1750. The allocation of 4,232 transferable rights equates to a projected $12,700,176 in value. The value per acre for transferred development rights was approximately $1,000. The number of rights allocated, the average price per development right, and the projected total value of the development rights sold, by year, are shown in Table 3 in the Appendix.

MONTGOMERY COUNTY, MARYLAND. Montgomery County is located immediately north-west of the District of Columbia. It comprises a land area of about 500 square miles, and has a current population of over 800,000 people. Its population has grown rapidly and consistently over the past 40 years.

In 1969, the County Council adopted a General Plan, called "Wedges and Corridors," to accommodate growth in a central corridor pattern and preserve the adjacent "wedge"

areas for rural, agricultural, and open space uses. The goal of the plan is to accommodate urban growth in an efficient and cost effective manner, while also maintaining the quality of the natural environment to the maximum extent possible.

By the late 1970's, the pressure to build scattered residential subdivisions in the wedge areas was threatening the continuing viability of the General Plan, and the county's remaining agricultural industry was in danger of erosion and flight from the area. In response, the county established a 110,000 acre Agricultural Reserve and other related regulations to help preserve the agricultural industry and achieve the concentrated development goals of the plan. Lands within this reserve were downzoned from one dwelling unit per five acres to one dwelling unit per 25 acres. In return, owners were allocated one TDR for each five acres of land.

In the fifteen years this program has been in operation, over 5,000 TDR's have been sold and transferred. TDRs are now an accepted element of the real estate market in Montgomery County. Since 1981, the initial price of about $5,000 per TDR has risen to today's average of about $11,000 per TDR. With each transferred TDR putting 5 acres of reserve land under easement, this equates to a selling price of over $2,000 per acre. (Data provided by Richard Tustian. *See also* R. Roddewig & C. Ingraham, *Transferable Development Rights Programs* (1987)).

SANTA MONICA MOUNTAINS. The California Coastal Conservancy administers a TDR program on behalf of the California Coastal Commission. This program does not issue a prescribed number of rights per land unit. Rather, Transferable Development Rights were allocated to property based upon the "developability" of the property. TDR allocation could be as much as one per acre or less, depending

on the property's "developability." The rights initially sold for as much as $43,000 per right, with rights later selling in the mid-$30,000 range. *Ibid.*

THE LONG ISLAND PINE BARRENS. A Central Pine Barrens Joint Planning and Policy Commission was created to develop means of protecting the pine barrens that are environmentally necessary to Long Island. One component of this program is a Transfer of Development Rights program.

The Pine Barrens program allocates rights to the owners of property within the Pine Barrens generally on the basis of the prior zoning. These rights can then be used to increase residential density within "receiving areas" designated by the three Towns -- Brookhaven, Riverhead, and Southampton. This program was adopted in June, 1996. Initial estimates are that these rights will command prices in the $12,000 range. Depending on the prior zoning, the market value of the rights is expected to be between $12,000 and $2,500 to $3,000 per acre. *See* Nicholas, J., *A Report to the Pine Barrens Credit Clearinghouse on the Value of Development Rights Within the Towns of Brookhaven, Riverhead, and Southampton* (1996).

II. Petitioner's Proposed Constitutional Rule Would Favor Traditional Low Density Zoning, Encourage Sprawl and Perpetuate Inequity.

Petitioner contends that the value of a Transferable Development Right should "count" for the purpose of a takings claim, if at all, only in determining what portion of "just compensation" a takings claimant might have received. Contrary to the established precedent established by this Court, *see Penn Central Transportation v. City of New York,*

438 U.S. 104 (1978), petitioner maintains that the value of the TDR "stick" in the property owner's bundle of rights should not be considered in assessing the economic impact of this type of regulatory program on the owner's property as a whole.

This new approach to the treatment of TDR programs under the takings clause would treat land use programs that rely on Tradeable Development Rights dramatically differently from programs that rely on traditional low density zoning controls. For a variety of sound reasons discussed below, the Court has always recognized that "the property owner necessarily expects the uses of his property to be restricted, from time to time, by various measures newly enacted by the State in legitimate exercise of its police powers." *Lucas v. South Carolina Coastal Council*, 505 U.S. 1028, 1027 (1992). Accordingly, in the land use context, the Court has repeatedly recognized that significant limitations on both the character and density of development are entirely consistent with the Constitution, even if they significantly reduce the value the property would have if unrestricted. See, e.g., *Agins v. City of Tiburon*, 447 U.S. 255 (1980) (rejecting takings challenge to restriction of one building to five acres which allegedly reduced property value by 85%); *Goldblatt v. Hempstead*, 369 U.S. 590 (1962) (upholding a town regulation that barred continued operation of an existing sand and gravel operation in order to protect public safety); *Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926) (rejecting takings challenge to zoning restrictions which allegedly reduced the value of property by 75%); *see generally Keystone Bituminous Coal Assn. V. DeBenedictis*, 480 U.S. 470, 489 n.18 (1987) ("[T]he Court has repeatedly upheld regulations that destroy or adversely affect real property interests."). By contrast, petitioner's theory would hold unconstitutional TDR programs even when those programs provide greater economic value for landowners and more equitable economic treatment overall.

An example illustrates this anomalous differential treatment. According to established law, zoning density restrictions that limited the number of residential units on a per acre basis and, for example, "reduced" the potential development value of the property by 50%, would not be found to be a taking. On the other hand, under petitioner's theory, a Transfer of Development Rights program that had the same 50% economic impact, except that the owner's development rights could only be exploited off site rather than on site, would be found to be a taking. Implementing a TDR program would therefore result in heavy fiscal liability for State and local officials. Allowing state and local governments to offset the value of the TDR against their taking liability, as petitioner proposes, would not alter the fact that the petitioner's rule would create takings liability for the TDR program and not for the traditional system with the same, or even greater economic effects.

Faced with such discriminatory constitutional treatment of TDR programs, State and local officials would be forced to continue their present heavy reliance on low density zoning that does not reduce overall development but simply spreads it out. The likely result of petitioner's takings rule would therefore be more urban sprawl, and its associated increase in the costs of providing public infrastructure such as roads and essential public services, such as fire and ambulance protection and schooling. Attempting to develop TDR programs that also would guarantee some intensive development of each parcel would not provide an effective solution to sprawl. Guaranteeing development of each parcel would deprive TDR's of their utility for limiting sprawl and other unwanted forms of development, and indeed would encourage scattered development leading to more sprawl. Furthermore, if petitioner's theory were adopted, efforts to concentrate

development, even where they produce aggregate increases in property values, would be less likely.

Finally, adoption of petitioner's theory would perpetuate the inequities inherent in the traditional land use regulatory system by forcing State and local officials to rely heavily on density controls, which force them into pursuing policies with unequal impacts in order to achieve necessary and important public objectives.

III. Unequal Impacts on Different Landowners Are an Inevitable Consequence of Reasonable and Necessary Land Use Regulations Which TDR Programs Can Help Mitigate.

For a variety of basic economic reasons, land use regulations inevitably have different economic impacts on different landowners that are beyond the reach of the takings clause. These inherently uneven impacts occur not merely because different types and levels of restrictions are appropriate for different properties but because the same restrictions can have dramatically different economic impacts on different lands. Many of these inequities can be at least partially addressed by TDR's. If, as petitioner contends, TDR's cannot be considered in making a takings determination, TDR's would have essentially no value to State and local governments for achieving greater equity while pursuing important public policies. In other words, petitioner's proposed takings rule, rather than advancing the equity concerns animating the takings clause, would more likely undermine efforts to address these concerns.

Regulations have differential impacts on different landowners in part because, as the Court has recognized on various occasions, legitimate police power concerns warrant different degrees of regulation of lands that have different physical characteristics. For example, in *First Lutheran*

Church v. Los Angeles County, 482 U.S. 304 (1987), Justices Blackmun, O'Connor, and Stevens recognized that a regulation prohibiting hazardous development in a floodplain is almost certainly not a taking whatever its economic impact. *See also First Lutheran Church v. Los Angeles*, 210 Cal. App. 3d 1353, 1370, 258 Cal. Rptr. 893 (1989), *cert. denied*, 493 U.S. 1056 (1990) (finding no taking on remand). Similarly, as Justice Kennedy noted in his concurring opinion in *Lucas v. South Carolina Coastal Council,* 505 U.S. 1001, 1035 (1992): "Coastal property may present such unique concerns for a fragile land system that the State can go further in regulating its development and use than the common law of nuisance might otherwise permit."

Some of these incontrovertibly necessary and valid restrictions are widespread. More than 80% of communities in the United States heavily restrict development in floodplains, including prohibition of virtually all development in the most fast-moving area of flood waters. [10] And these restrictions have been broadly upheld even when they appeared to reduce the value of property significantly.[11] Development is also routinely prohibited or

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10 See Federal Interagency Floodplain Management Task Force, *Floodplain Management in the United States: An Assessment Report,* Vol. 2 at 6-23, Table 6-3 (1992) (revealing that 82% of all communities with flood hazard areas participated in the federal flood insurance program). The minimum requirements of the federal flood insurance program are that communities adopt ordinances prohibiting significant fill in the floodway, the fast-moving portion of floodplains, and requiring that structures be elevated on stilts or otherwise protected against flooding in the remainder of the 100 year floodplain for 100 year floods. *Id.* at 11-8, 11-9. These restrictions appear to be highly successful in reducing flood damages in that structures built after promulgation of the regulations have made flood insurance claims less than one quarter as frequently as pre-regulation structures. *Id.* at Vol. I at 31.

11 *See, e.g., Adolph v. Federal Emergency Management Agency,* 854 F.2d 732 (5th Cir. 1988) (holding that FEMA flood control regulations

heavily limited in the United States where soils do not support septic systems and sewers are not available.

Even where restrictions permit identical development opportunities, the economic impacts can differ dramatically. Density restrictions may leave different properties each the same right to develop a house, but that development opportunity may be worth a great deal in some locations and not in others.

The different configurations in which land is held also influence the impact of regulations. Minimum lot sizes, a street setback requirement or a prohibition on building in riparian zones may have positive impacts on the value of a larger parcel of land, which may benefit from contiguous setback areas that extend through their property. But these restrictions may require that smaller parcels of land in those restricted zones be merged with adjacent parcels to realize economic value.

Regulatory programs also necessarily have disproportionate impacts on different landowners because a variety of neighboring public and private investments greatly influence the suitability of different parcels for different uses. The physical solidity of real property may appear to give it an intrinsic value that is independent of neighboring activities, but as early as the nineteenth century, the German economist J.H. von Thunen recognized that the actual value of land heavily depends on its location in relation to other

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were not a taking as a matter of law); *April v. City of Broken Arrow,* 775 P.2d 1347 (Okl. 1989) (upholding ordinance regulating development in floodplain); *Usdin v. State Department of Environmental Protection,* 173 N.J. Super. 311, 414 A.2d 280 (1980) (upholding state prohibition against structures in floodway); *Foreman v. State Department of Natural Resources,* 387 N.E.2d 455 (Ind. 1979) (same); *Pope v. City of Atlanta,* 242 Ga. 331, 249 S.E.2d 16 (1978), *cert. denied,* 440 U.S. 936 (1979) (upholding impervious cover restriction in floodplain prohibiting tennis court).

activities. *See* J.H. von Thunen, *The Isolated State* (1826). This insight is carried forward to the present day by the real estate industry cliche that the three most important factors determining property value are "location, location, location." The interdependence of property values with neighboring private and public investments means that similar regulatory policies will often affect different properties in highly unequal ways. (Indeed, the public demand for land use regulations that make them ubiquitous arises from the concern that neighboring land uses could otherwise adversely affect the value of developed property. Government actions influence a property's value as much by the restrictions on other land as on the property itself.)

Examples of government actions that differently affect the value of different properties range from infrastructure investments like highways and railroads, to economic policies toward land intensive industries such as farm policies, to land use and environmental laws. Studies of the impact of highways on land values have found that highways can increase the value of some suburban land to which they extend access by as much as 750% while decreasing the value of lands with less access by 50%.[12] Studies of federal agricultural policies show that they can greatly increase the value of some lands, but not others.[13]

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12 J.H. Lemly, *Expressway Influences on Land Use and Value: Atlanta 1941-1956,* Report to the State Highway Department of Georgia. Bureau of Business Research, Georgia State College 92 (1958). For studies showing similarly different results ranging from 54% difference to 106% difference for lands with differing degrees of highway access, *see* U.S. Department of Transportation, *Social and Economic Effects of Highways* (1974).

13 Some of the largest differences have been found in the different impacts of the federal tobacco program, increasing the value of land that had a large tobacco allotment by a large percentage over land that was not favored by the program. *See, e.g.*, M. Shuffett and J. Hoskins, "Capitalization of Burley Tobacco Allotment Rights into Farmland Values, 51 *American Journal of Agricultural Economics* 471-74 (1969) (adding value of $6,015 per acre to farms with tobacco allotments); V.L. Vantreese, M.R. Reed & J.R. Skees, "Mandatory Production Controls and Asset Values: A Case Study of Burley Tobacco Quotas," 70 *American Journal of Agricultural Economics* 319-25 (1989) (adding 38.9% to the value of farmland in 1976).

The uneven effect and regulatory treatment of traditional land use regulations in part simply reflect the unequal results of these other government policies. For example, it is rational and constitutional for state and local governments to zone land for commercial or industrial development where the public has already invested in various forms of infrastructure.[14] (Studies have then found that different zoning categories can have dramatically different land values).[15] Even identical regulatory restrictions will have different economic effects depending on the proximity to publicly funded roads, sewers and so on (as well, of course, on the compatibility of other neighboring private development).[16] The uneven economic impact of land use regulations therefore reflects other governmental policies and forces that have their own inevitably uneven affects.

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14 For a study suggesting that land use rules in Chicago did respond to other government infrastructure and therefore facilitate differences in land values, *see* Daniel P. McMillen & John F. McDonald, "Urban Land Value Functions with Endogenous Zoning," 29 *J. Urb. Econ.* 14-27 (1991).

15 See Paul Asabere & Peter Colwell, "Zoning and the value of Urban Land," 8 *Real Estate Issues* 22-27 (1984) (commercially zoned land worth 80% more than average and single family residential land worth 50% below the average).

16 For example, access to highway interchanges increased the differential economic impact of differing zoning categories in one 1981 study of urban fringe areas around Chicago. David L. Chicoine, "Farmland values at the Urban Fringe: An Analysis of Sale Prices," 57 *Land Economics* 351-362 (1981).

In all the cases described above, TDR's can contribute to greater equity. They can be used to provide development rights to those in areas like floodplains who might otherwise have only minimal development opportunities under traditional regulation. They can address the hardship situation of the landowner whose land falls entirely in a setback zone

TDR's also may allow landowners who have development rights but little development value the opportunity to overcome some of the disadvantages of their locations -- an inequality that is often an accident of the location of government infrastructure. TDR programs will typically select growth receiving areas for TDR credits where growth can be serviced by existing infrastructure. By allowing landowners whose development rights have little value on their own land the opportunity to sell rights to those in growth areas where development rights have greater value, landowners throughout a community can partake of the benefits of central location.

TDR's can also improve equity by permitting a greater sharing of the reciprocal benefits of land use rules. These different reciprocal benefits may actually give some lands a false appearance of a decline in value simply because those lands have unequally shared in the rise in values. Land use restrictions may be said to decrease value as a result of the restrictions but increase value as a result of the restrictions on others. It is extremely difficult to measure the net impact. Indeed, the common method of comparing the value of restricted property with unrestricted property is likely to be inaccurate because the value of unrestricted property in a regulated world where it benefits from the restrictions on others does not reveal what its value would be in the absence of regulation.

One study concluded, for example, that new restrictions limiting land development in the sensitive New Jersey Pinelands to one house in 40 acres did not decrease the land's value when compared with "control" land just outside the Pinelands region.[17] The study also revealed, however, that the restrictions greatly increased the value of existing developed land in the Pinelands. Although the individual landowner might feel himself deprived because his land would have far greater worth if it could be intensively developed while other restrictions remained in place, the net impact on the restricted landowner (in part because of TDR's) was not significant.

But TDR's can improve on this situation because they provide a new tradeable development opportunity that can be exercised in the intensive growth zones in the community. TDR programs provide a mechanism to more equitably distribute the value-enhancing effects of many regulations.

Finally, TDR's provide a mechanism for achieving equity that does not require significant sacrifice of the purpose of a regulation. If the only tool government officials have for treating landowners equally is by allowing some development on each parcel of land, then the pursuit of social objectives requiring the differential treatment of different properties will likely be undermined. TDR programs allow State and local governments to pursue regulatory purposes more effectively while also achieving greater equity

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17 Beaton, P.W., "The Impact of Regional Land-Use Controls on Property Values: The Case of the New Jersey Pinelands," 67 *Land Economics* 172 (1991). Another study of restricted developments within a broad buffer area around the Chesapeake Bay found similar impacts. *See* Beaton, P.W. & M. Pollock, "Economic Impact of Growth Management Policies Surrounding the Chesapeake Bay," 68 *Land Economics* 434-53 (1992).

For all these reasons, a takings rule that disregarded the value of TDR's would probably freeze their development and undermine values animating the takings clause.

IV. Urban Sprawl Imposes Substantial Economic and Social Costs on the Public as Well as Private Citizens and Firms.

As discussed above, the objective of limiting development costs while allowing some development for each parcel of land has helped to make density restrictions of varying character the predominant form of land use regulation in America. *See* Platt, R.H., *Land Use and Society: Geography, Law and Public Policy* 233 (1996). Density restrictions are not the only cause of dispersed development, or "urban sprawl," but they facilitate and encourage it by spreading out development.[18] One of the serious implications of petitioner's takings is the potentially serious economic inefficiencies associated with this "urban sprawl."

Over the last several years, a variety of different interests have identified urban sprawl as a serious and increasing national problem. For example, as stated in a 1994 report about sprawl in California, issued by a coalition led by Bank of America: "[A]s we approach the 21st Century, it is clear that sprawl has created enormous costs that California can no longer afford. Ironically, unchecked sprawl has shifted from an engine of California's growth to a force that now threatens to *inhibit* growth and degrade the quality of life." Bank of America *et al*, *Beyond Sprawl: New Patterns of Growth to Fit the New California* (1995). *See generally* "Drawing the Hard Line of Urban Sprawl," T.

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18 In 1983, roughly two thirds of all both existing (67%) and new (62%) U.S. Housing units were single family homes on separate lots, and most of these lots were created in accordance with specific subdivision ordinances. Platt at 297.

Egan, *The New York Times*, December 30 & 31, 1996 (two part series on problem of sprawl in western United States); Reid Ewing, "Is Los Angeles Style Sprawl Desirable," 63 *J. Am. Pla. Ass.* 107-126 (1997).

At root, the problem of inefficient land use patterns, or "sprawl," derives from the fact that American land use policies and practices have produced increasingly diffuse settlement patterns. While most of the nation's central cities are deteriorating, the extent of urbanized lands is growing exponentially. For example, the urban area surrounding New York City expanded by 65% between 1960 and 1985, despite the fact the population of the region grew by only 8% in the same period. New York Regional Plan Association, *The Region Tomorrow* (1990). Cleveland's urbanized area expanded by 33% between 1970 and 1990 even though its population actually fell by 11%. Lincoln Institute of Land Policy, *Alternatives to Sprawl* 5 (1995). On a national basis, the amount of land devoted to urban use has nearly tripled between 1960 and 1990 while average density fell by more than one third.[19] Real estate professionals have predicted that urban land use will grow in the future at 8 to 12 times the rate of employment and population expansion. Leinberger, C.,"Metropolitan Development Trends of the Late 1990s: Social and Environmental Implication," *in* Diamond, H.L and P. Noonan, *Land Use in America* 220 (1996).

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19 There is no one measurement of urban areas. This figure measures urban areas as calculated by the U.S. Department of Census, which expanded in square miles from 24,111 to 61,014 between 1960 and 1980 while average density fell from 4,090 to 2,589. Platt, R. H. *Land Use and Society: Geography, Law and Public Policy* 23 (1996). Measured by metropolitan areas, which include some open land between more urban areas, the land area devoted to urban uses rose from 6% of the land area to 19% between 1950 and 1992. Between 1960 and 1980, central city populations declined from 68 million to 59 million while suburban populations grew from 59 million to 101 million. *Id.* at 22.

Sprawl development increases the cost of providing public facilities and services to residents and businesses. As common sense suggests, the costs of virtually every public facility and service -- from road construction and maintenance, to fire protection, to water and sewer service, and so on -- increases with a more scattered development pattern. *See* Frank, J. E., *The Costs of Alternative development Patterns: A Review of the Literature, Urban Land Institute* 39 (1989). If sprawl is associated with the abandonment of previously urbanized areas, these costs may simply represent net additions to the tax bill without any corresponding increase in public benefits. In the Minneapolis/St. Paul metropolitan region, for example, the number of children of school age declined by almost 80,000 in the 1970's and 1980's, resulting in the closure of 132 schools, but new sprawl development necessitated the construction of 41 new schools on the metropolitan fringe. Lincoln Institute of Land Policy, *Alternatives to Sprawl* at 22.

A number of studies have quantified the public costs of sprawl in great detail. The 1995 Bank of America-led study concluded that the costs of new roads, schools and other infrastructure "often have the effect of doubling a new homeowner's property tax bill." Bank of America *et al* at 6. Recent studies have estimated the costs of sprawl versus more concentrated development plans for the State of New Jersey, Lexington, Kentucky and the Delaware Estuary region, finding that sprawl would impose additional infrastructure costs ranging from 14.8% to 25% for roads and 6.7% to 15% for utilities.[20] The New Jersey study

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20 Burchell, Robert W., et al. I*mpact Assessment of the New Jersey Interim State Development Plan, Report III: Supplemental Al PLAN Assessment,* Report prepared for New Jersey Office of State Planning x-xx (1992); Burchell, Robert W. and David Listokin, *The Economic Effects of Trend Versus Vision Growth in the Lexington Metropolitan*

estimated that generally concentrated growth plans would likely save a total of $1.3 billion in capital and operating costs for municipalities and State government over twenty years. The Delaware study also found that the overall costs of providing schools was reduced by 6.9% with a more concentrated development pattern.

The Urban Land Institute in 1989 reviewed more than thirty years of studies and concluded that on average a three unit per acre development located 10 miles from central facilities and employment patterns cost $48,000 in new infrastructure costs. If that new development were placed closer to existing infrastructure and in somewhat greater density, the public costs declined by half. Frank, James E., *The Costs of Alternative development Patterns: A Review of the Literature, Urban Land Institute* 39 (1989).

Apart from these public costs, sprawl also imposes higher private costs on private citizens and businesses. Perhaps most significant of all is the increased automobile use associated with dispersed land development patterns. Many studies have confirmed the common sense intuition that dispersed development is strongly associated with increased reliance on the automobile. U.S. Congress Office of Technology Assessment, *Saving Energy in U.S. Transportation* 199-212 (1994) (reviewing the studies). Sprawl development increases automobile costs both by increasing the need for families to operate more than one car (77% of all households with two or more adults now have at least two vehicles) and by increasing the miles driven (up by 200% between 1960 and 1990 even as population increased only 40%.). E.W. Johnson, *Avoiding the Collision of Cities*

Area, Report prepared for Bluegrass Tomorrow 129 (1994); Burchell, Robert W., William Dolphin and Harvey S. Moskowitz, *Impact Assessment of DELP CCMP Versus Status Quo on Twelve Municipalities in the DEP Region.,* Report prepared for the Delaware Estuary Program. 12 (1995).

and Cars: Urban Transportation Policy for the Twenty-first Century, Report of a Study Project sponsored by the American Academy of Sciences in Cooperation with the Aspen Institute (September 1993). Similarly, the Bank of America-led study concluded that the automobile consumes 20% of the budget of the average Californian.

The costs of sprawl are also reflected in dramatic and growing increases in congestion. The General Accounting Office of the U.S. Congress found that traffic delays resulting from congestion increased by 57% between 1985 and 1988. United States General Accounting Office, *Traffic Congestion: Trends, Measures and Effects* (1988). The costs, in terms of time delays, wasted fuel and insurance premiums are generally estimated to be "in the tens of billions of dollars and . . . rising rapidly." Office of Technology Assessment at 112. The Bank of America-led study cited research finding that average commuting times in two developing counties in California increased by 13% in only 10 years, and it attributed a significant loss of business from the State to this rise in congestion. *Bank of America* at 6.

Additionally, apart from these direct economic costs, sprawl imposes other types of adverse impacts on society, including increased air and water pollution and rapid loss of valuable natural resources. Highway vehicles contribute roughly 35% of volatile organic compounds, the primary contributor to urban smog. Office of Technology Assessment at 130. While the level of pollutants emitted by each car has declined enormously under the Clear Air Act, these technological advances been heavily offset by an increase in the number of vehicle miles traveled of nearly 200% between 1960 and 1990 (while the population grew by only 40%.) As discussed above, this recent increase in automobile usage is related to more dispersed settlement patterns. Moreover, efforts to address increased automobile

use and greater air pollution resulting from sprawl through more reliance on mass transportation are undermined by the economic impracticality of constructing mass transit to service highly dispersed populations. Office of Technology Assessment at 193, 211 (finding that any effort to increase reliance on mass transit must be combined "with strong development controls and incentives" for concentrated development).

Sprawl development also results in a great increase in impervious surface area with resulting increases in water pollution as well as flooding problems. *See generally* Klein, R.D., "Urbanization and Stream Water Quality," 15 *Water Resources Bulletin* 4 (1979). In growing suburban counties in Maryland and Virginia, the growing runoff pollution associated with sprawl has more than offset expensive pollution controls on factories and sewage treatment plants. *See* Cohn-Lee, R.G. & D.M. Cameron, "Urban Stormwater Runoff Contamination of the Chesapeake Bay: Sources and Mitigation," 14 *Environmental Professional* 10-27 (1992). In the Chesapeake Bay, for example, this runoff contributes more toxic pollutants than factories and sewage treatment plants. *Id.* In the Pacific Northwest, increasing suburbanization is blamed for larger and more frequent floods. T. Egan, *The New York Times*, December 30, 1996.

Finally, sprawl development is the driving force behind the rapid loss of some of America's most fertile farmland. According to the Bank of America-led study, California's Central Valley lost almost half a million acres of farmland between 1982 and 1987. This study also concluded that sprawl has undermined the agriculture economy indirectly by reducing the productivity of farmland as a result of pollution, undermining agricultural infrastructure, and destabilizing land markets. Nationwide, between 1982 and 1992, cropland area decreased by 39 million acres, a decrease of 9%. U.S.

Department of Agriculture, Soil Conservation Service, *1992 National Resources Inventory*.

As the Montgomery County and other examples discussed above show, TDR programs can help to limit sprawl equitably. TDR's have been recommended as a regulatory tool for controlling sprawl and its associated costs by builders and planners alike.[21] By contrast, a takings rule that held that each parcel of land must be individually developable would encourage further dispersal of development and foster more inefficient land development nationwide.

CONCLUSION

For all the foregoing reasons, if and to the extent the Court deems it appropriate to reach the merits in this case, amici urge the Court to conclude that the value of a Transferable Development Right is appropriately taken into account in determining whether a taking has in fact occurred.

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21 *See, e.g.*, The Baltimore Sun (Feb. 18 1996), 1996 WL 6605863 (quoting L. Earl Armiger, president of Maryland Builders Association, as recommending TDR's to limit sprawl and encourage building in older suburbs); Stanley D. Abrams, "Flexible Zoning Techniques to Meet State and Local Growth Policies," C930 *ALI-ABA* 537, 547 (1993) ("The TDR concept is becoming the front line defense in preventing sprawl and leap-frog development.")

APPENDIX

Table 1

PINELANDS DEVELOPMENT CREDITS 1981-1995	
NUMBER OF DEVELOPMENT RIGHTS CREATED	33,200
TOTAL ACREAGE OF SENDING AREA	840,100
NUMBER OF RIGHTS ALLOCATED	4,232
NUMBER OF RIGHTS SEVERED	1,477
FIRST TIME SALE OF RIGHTS	1,089
RESOLD RIGHTS	339
ACRES PROTECTED THROUGH SEVERANCES	12,969

SOURCES:

1. New Jersey Pinelands Commission, "Pinelands Development Credits, Summary Report Through December 31, 1995," (1996).

2. New Jersey Pinelands Commission, "Pinelands Development Credits: A Landowner's Guide," (1981).

Table 2

PINELANDS PRESERVATION AREAS	
PRESERVATION AREA DISTRICT	368,100 Acres
FOREST DISTRICT	386,500 Acres
AGRICULTURAL PRODUCTION DISTRICT	85,500 Acres
TOTAL PRESERVATION ACREAGE	840,100 Acres

SOURCE: U.S. Dept. of the Interior, "Draft Environmental Impact Statement, Proposed Comprehensive Management Plan for the Pinelands National Preserve," 4.13 (undated).

Table 3

PROJECTED VALUE OF PINELANDS DEVELOPMENT CREDIT ALLOCATIONS 1981 - 1995

	RIGHTS ALLOCATED	AVERAGE PRICE	VALUE OF RIGHTS
'81	332		$830,000
'82	662	$2,500	$1,655,000
'83	518	$2,500	$1,295,000
'84	217	$2,500	$542,500
'85	123	$2,425	$298,275
'86	30	$2,031	$60,938
'87	44	$2,500	$110,000
'88	38	$2,500	$95,000
'89	386	$2,508	$967,942
'90	714	$3,878	$2,769,016
'91	269	$3,517	$946,146
'92	34	$3,532	$120,085
'93	246	$3,518	$865,370
'94	504	$3,525	$1,776,478
'95	115	$3,204	$368,426
TOTALS	4,232		$12,700,176

SOURCE: New Jersey Pineland Development Bank.